Fig. 5

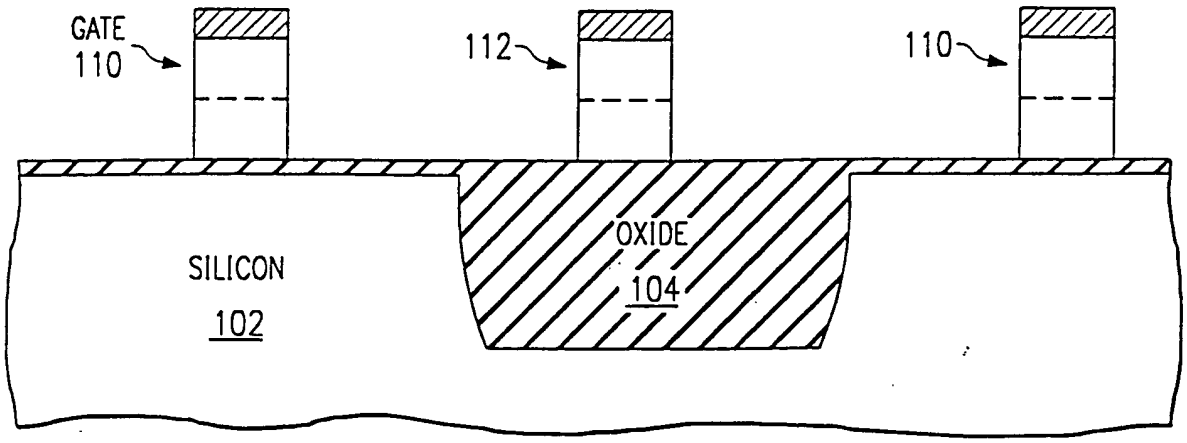


FIG. 1a

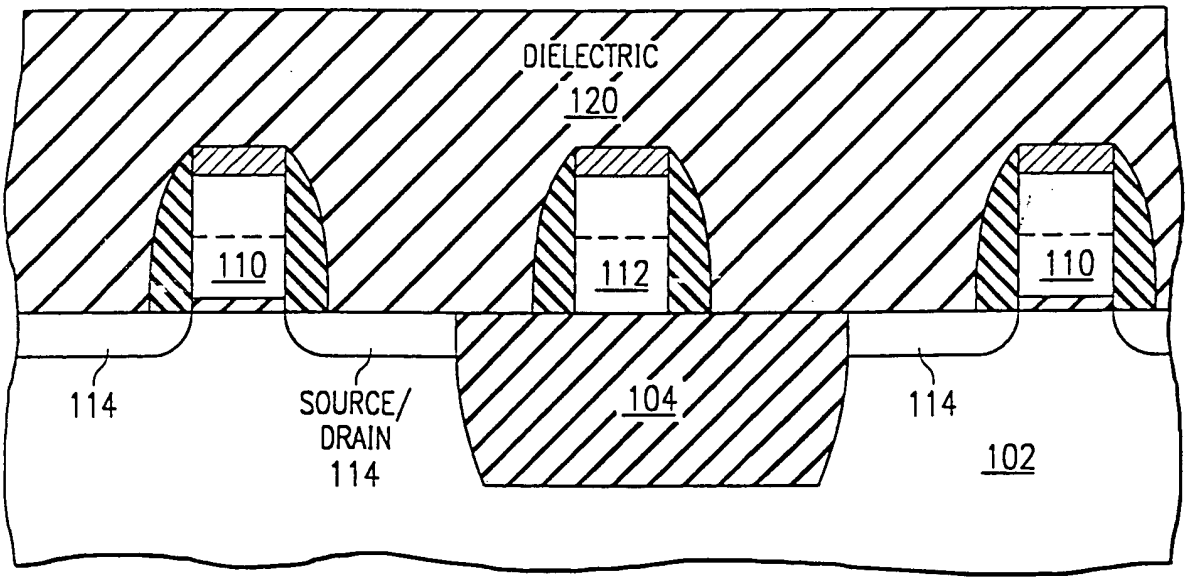


FIG. 1b

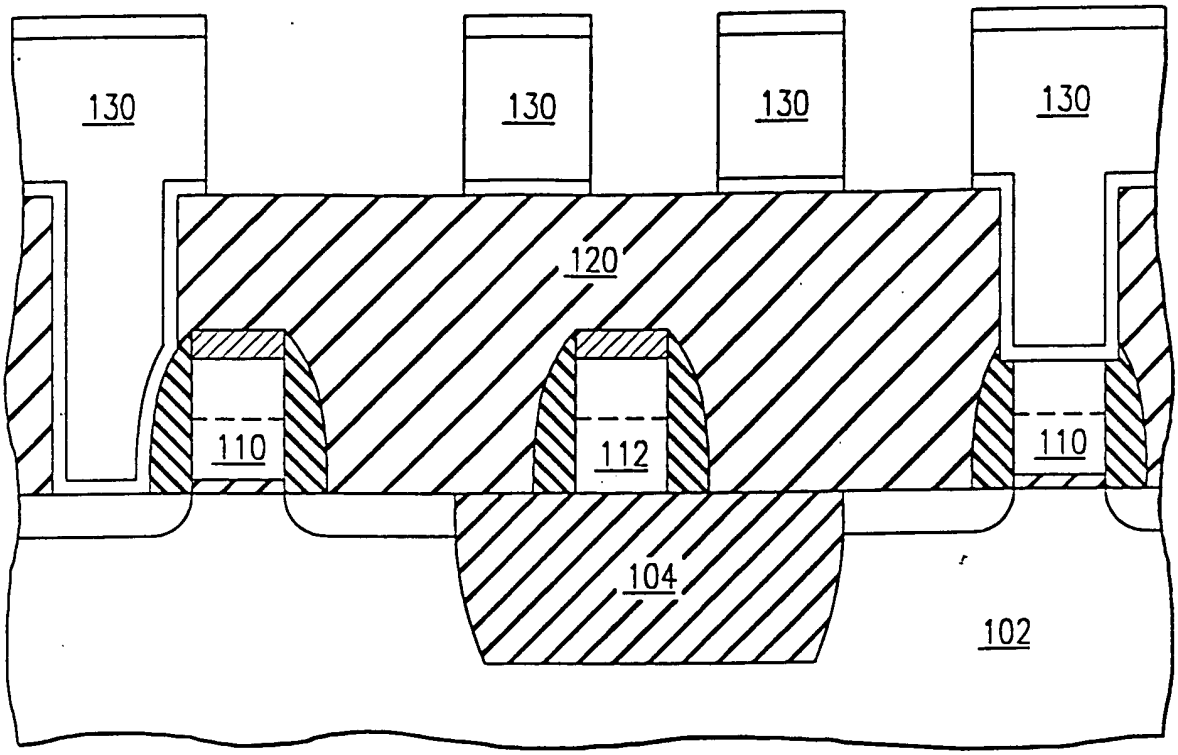

130
130
130
130
120
110
112
110
104
102

FIG. 1c

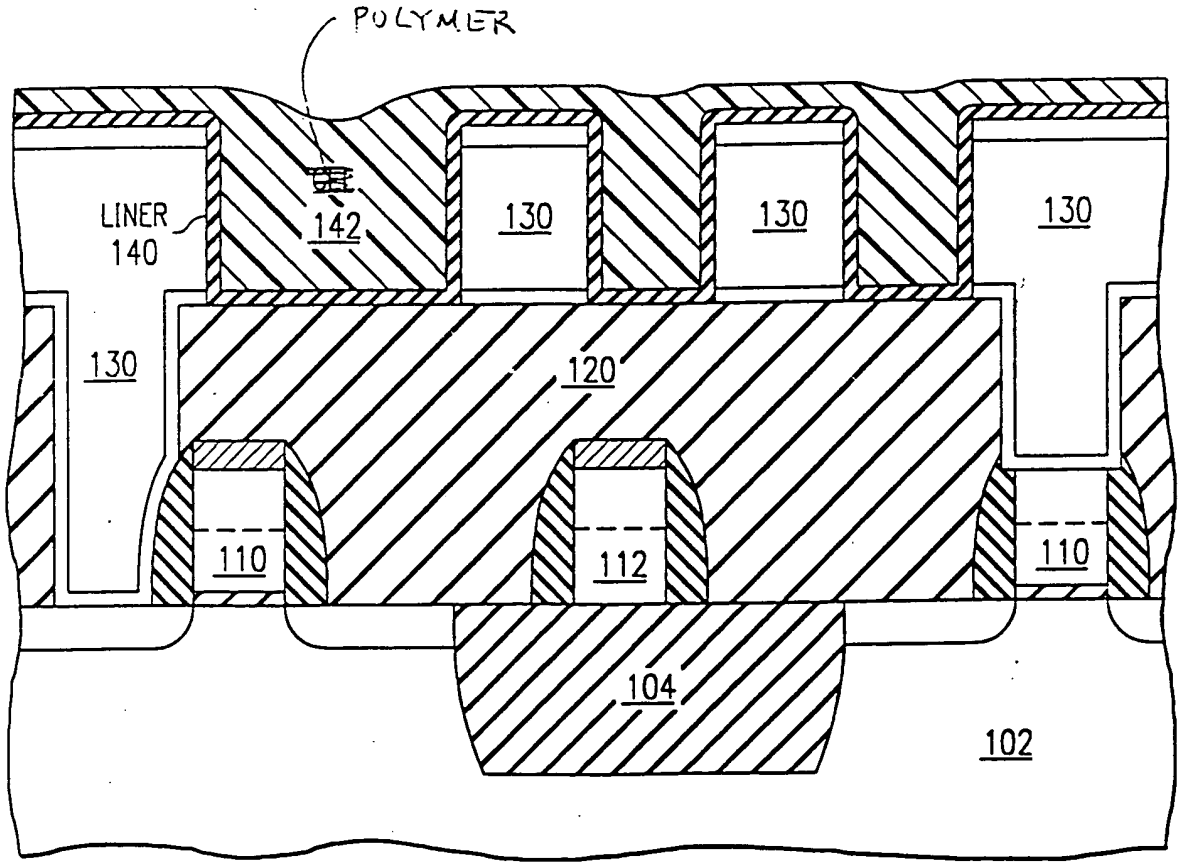

POLYMER
LINER
140
142
130
130
130
130
120
110
112
110
104
102

FIG. 1d

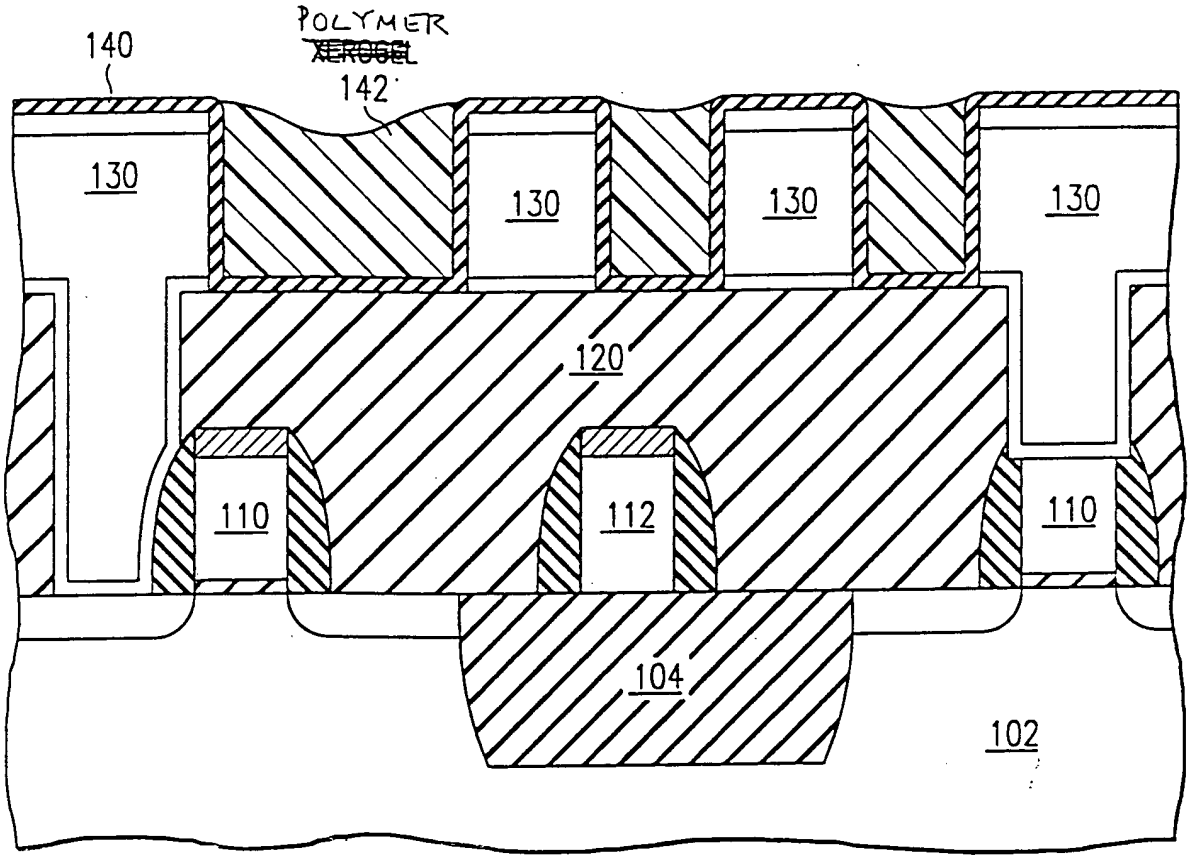

140
POLYMER
~~XEROGEL~~
142
130
130
130
130
120
110
112
110
104
102

FIG. 1e

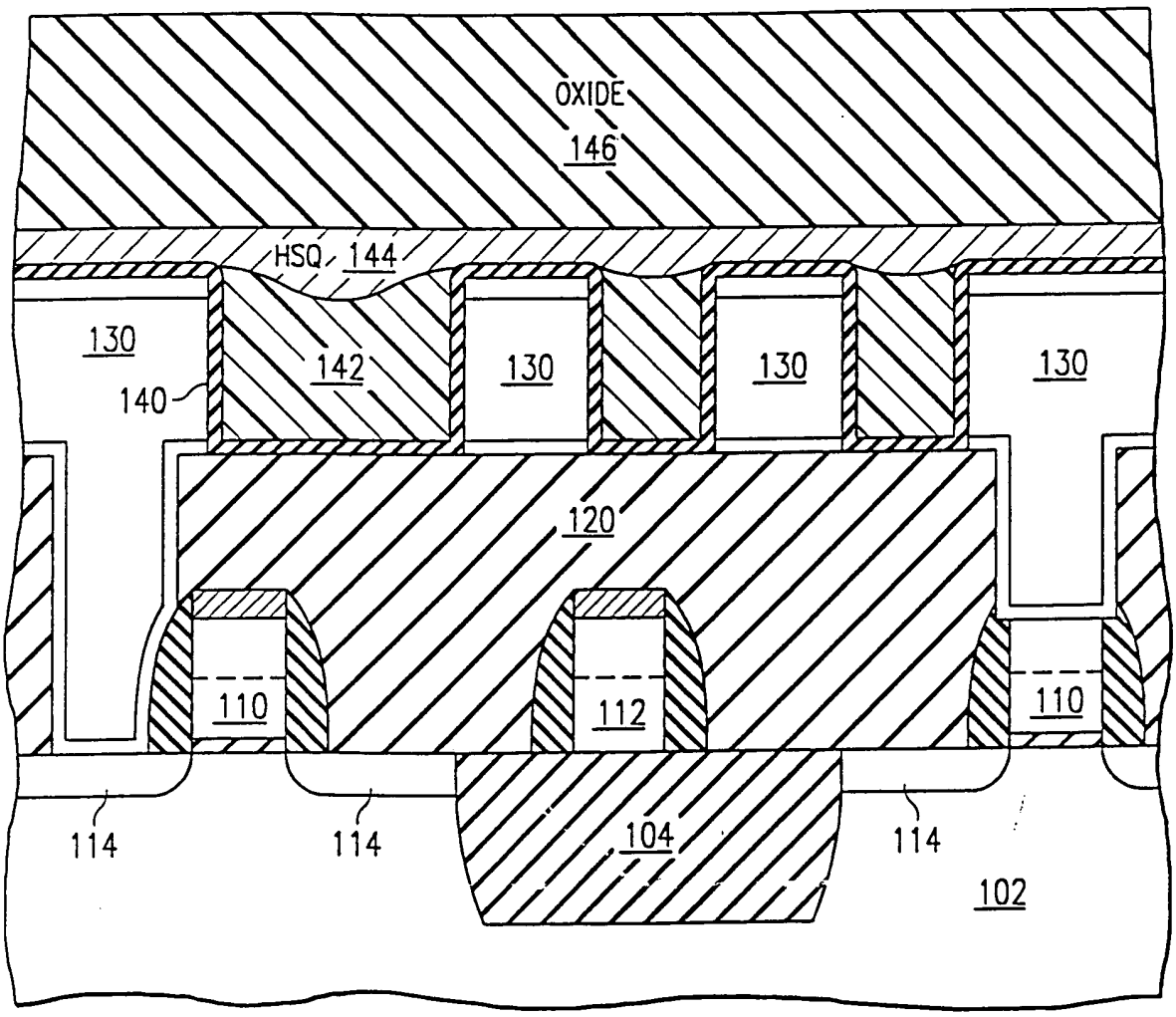

OXIDE
146
HSQ
144
130
140
142
130
130
130
120
110
112
110
114
114
104
114
102

FIG. 1f

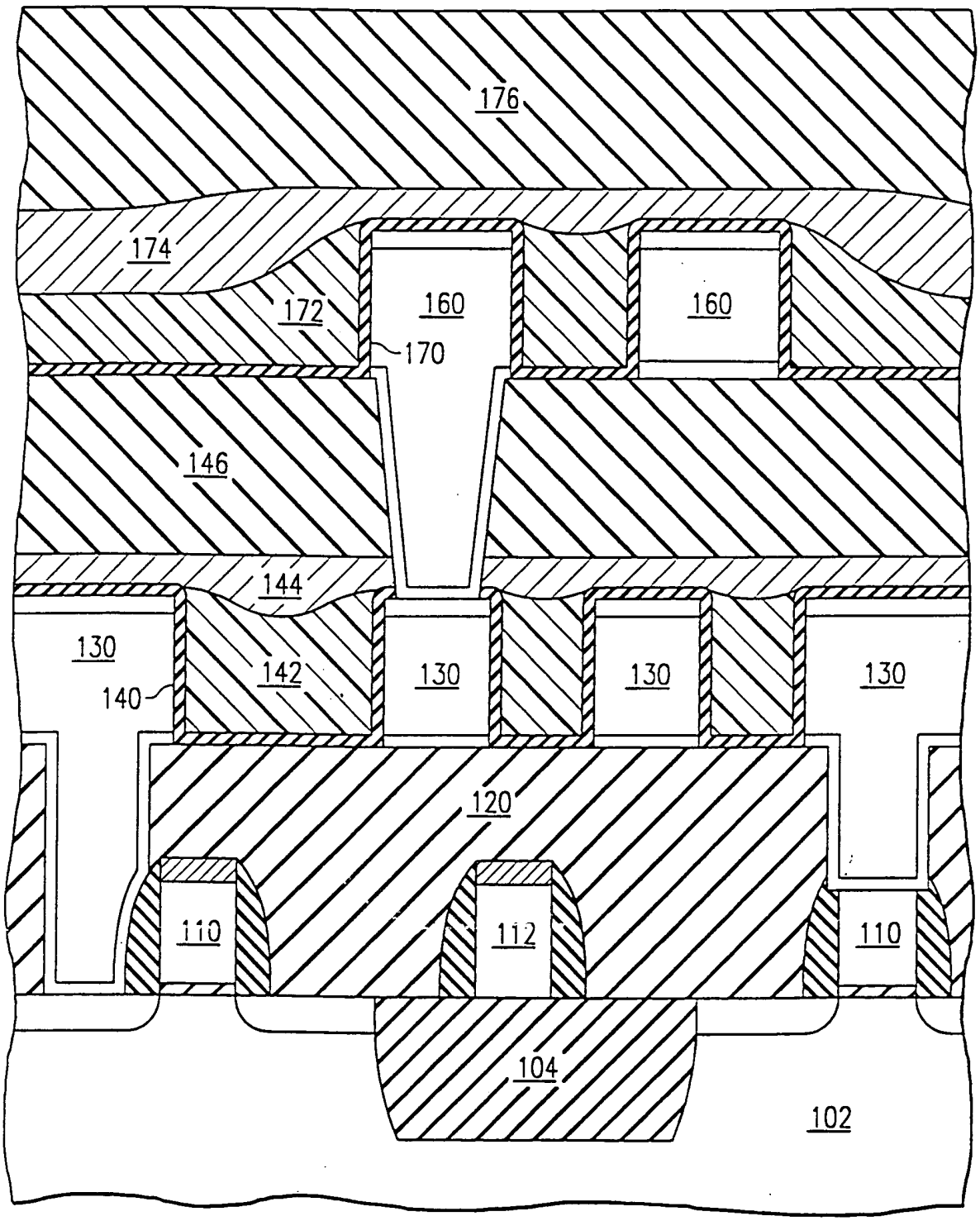

176
174
172
160
160
170
146
144
130
142
130
130
130
140
120
110
112
110
104
102

FIG. 1g

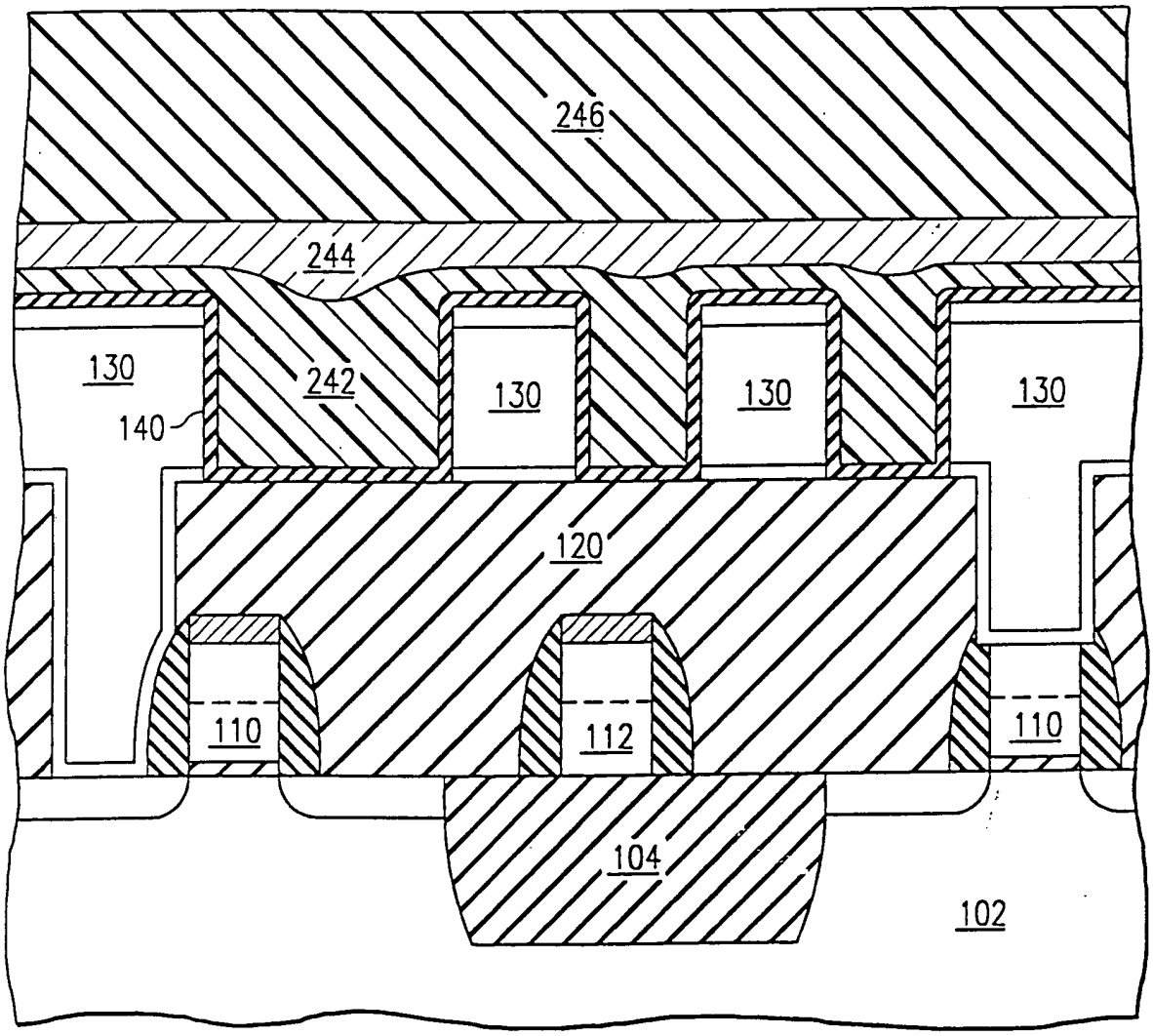


FIG. 2a

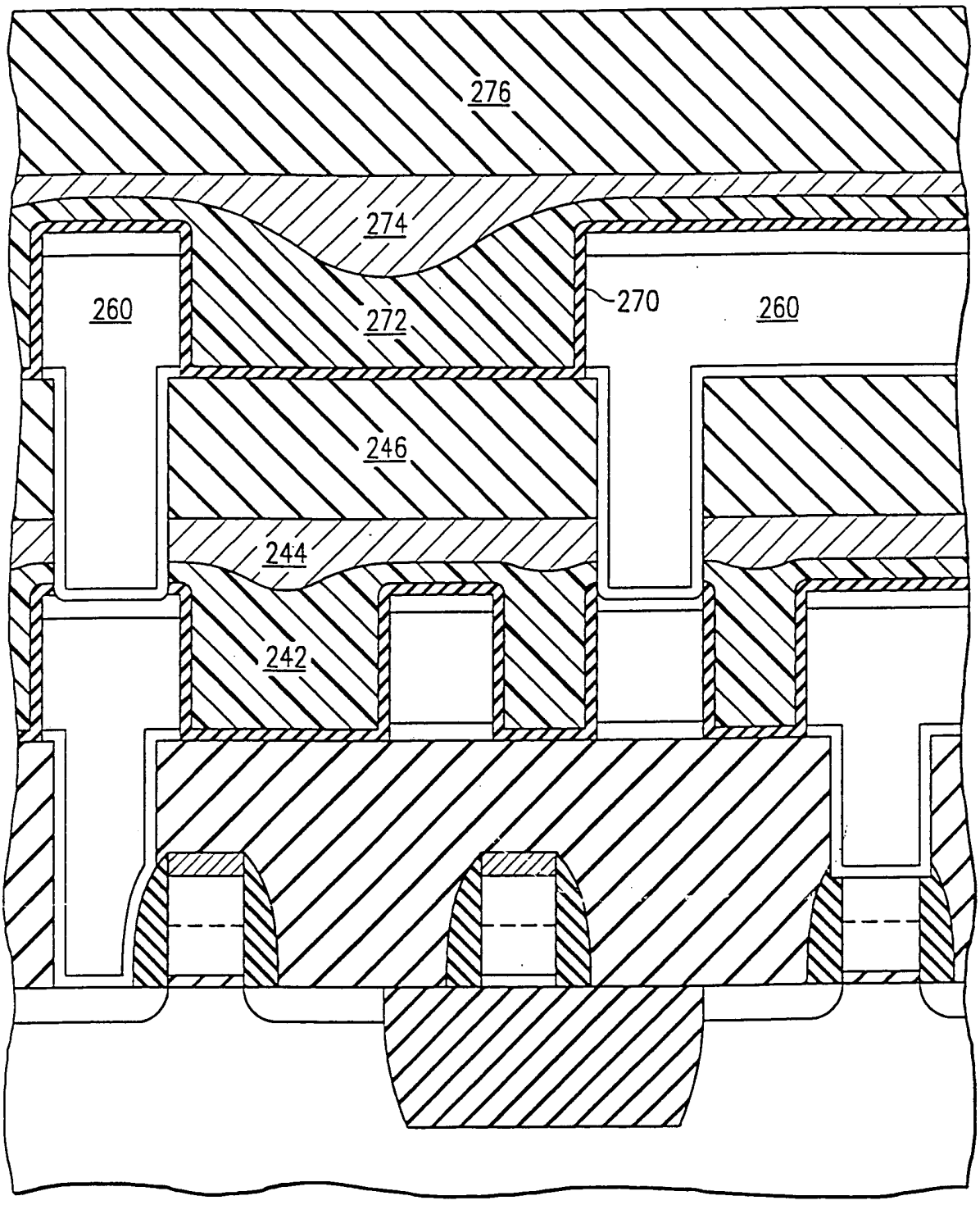


FIG. 2b

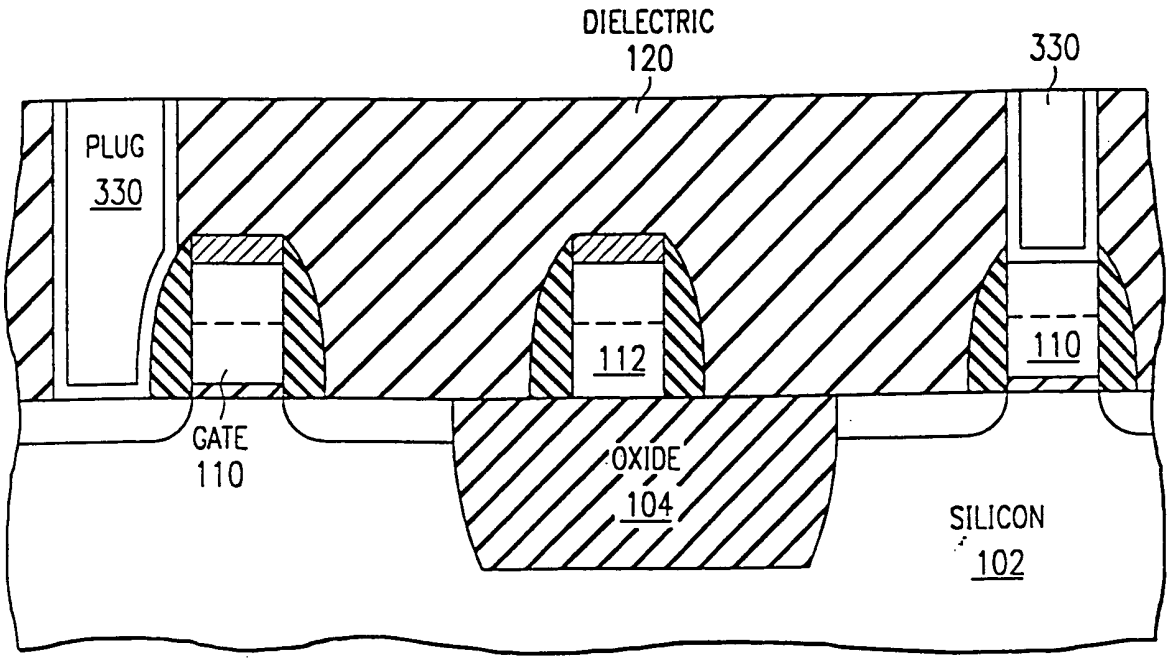

DIELECTRIC
120
330
PLUG
330
112
110
GATE
110
OXIDE
104
SILICON
102

FIG. 3a

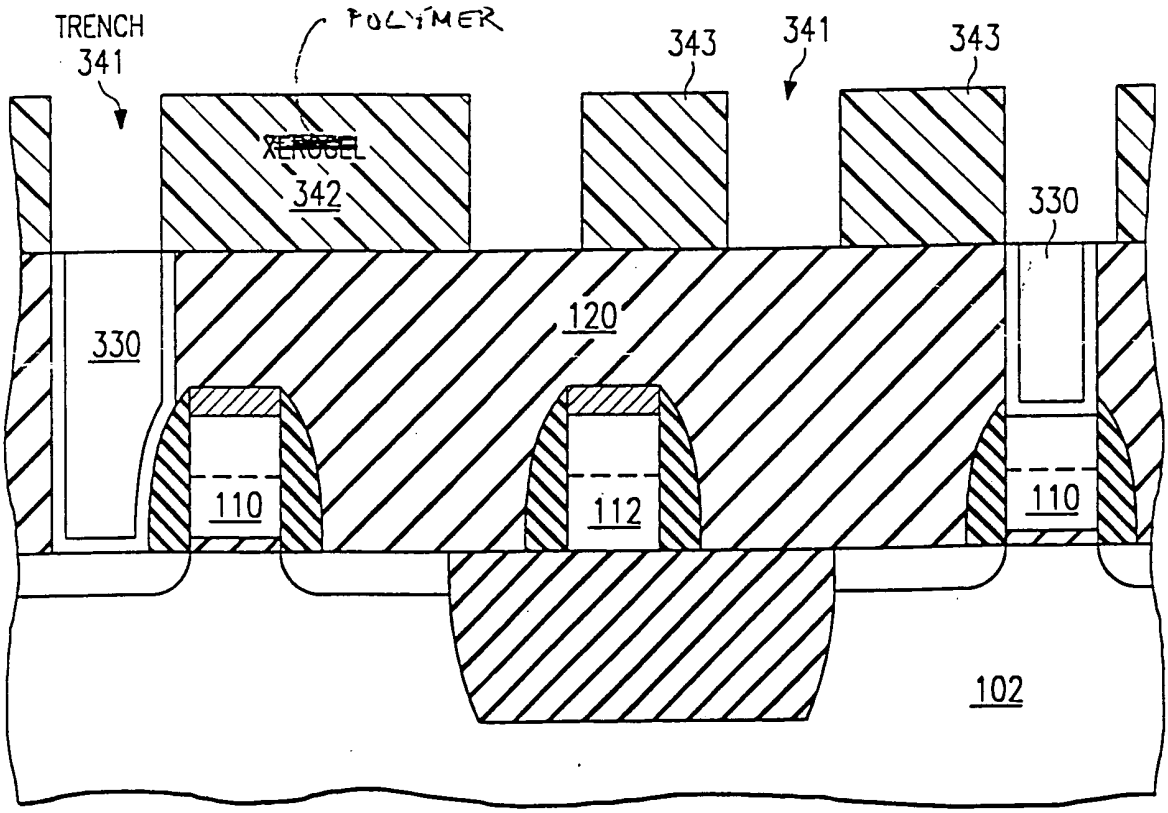

TRENCH
341
POLYMER
343
341
343
XEROGEL
342
330
330
120
110
112
110
102

FIG. 3b

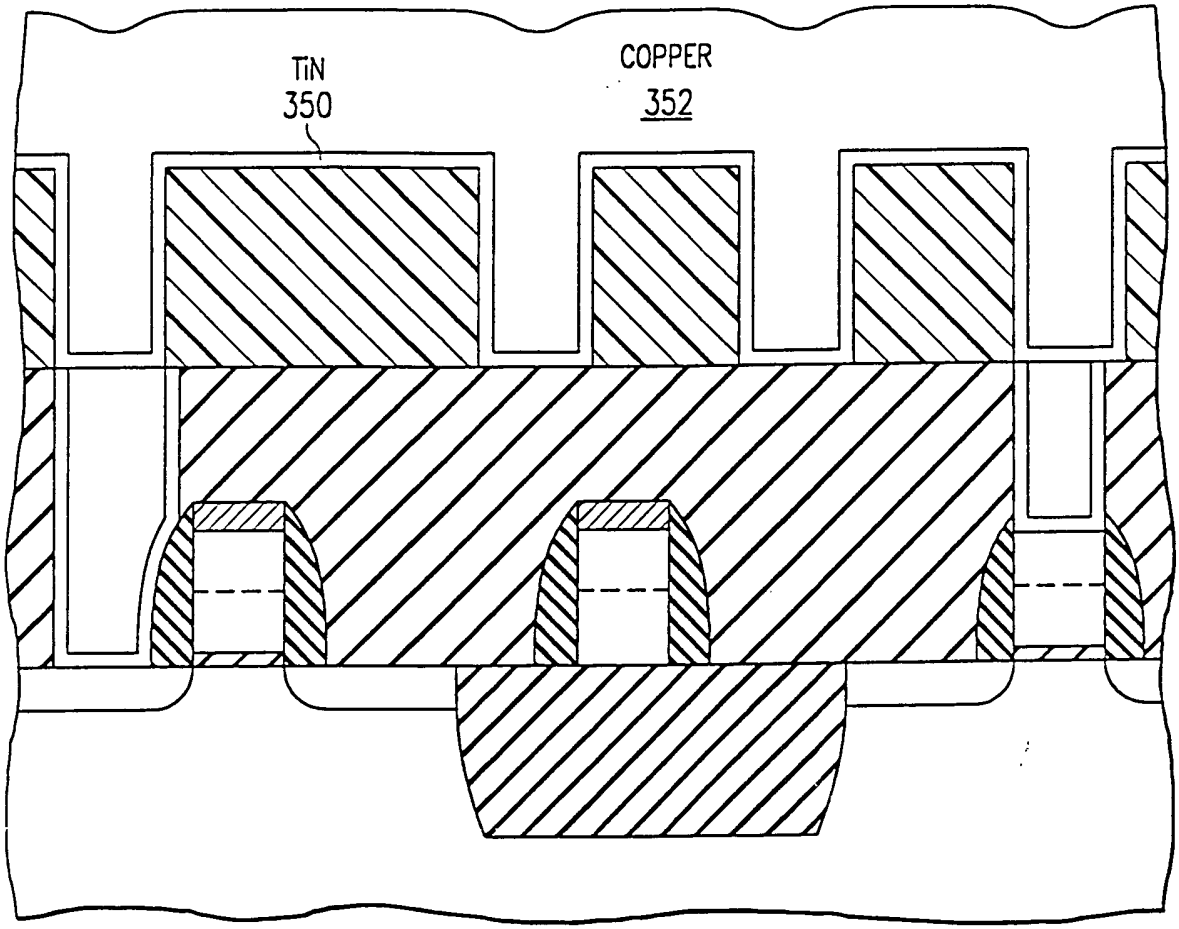


FIG. 3c

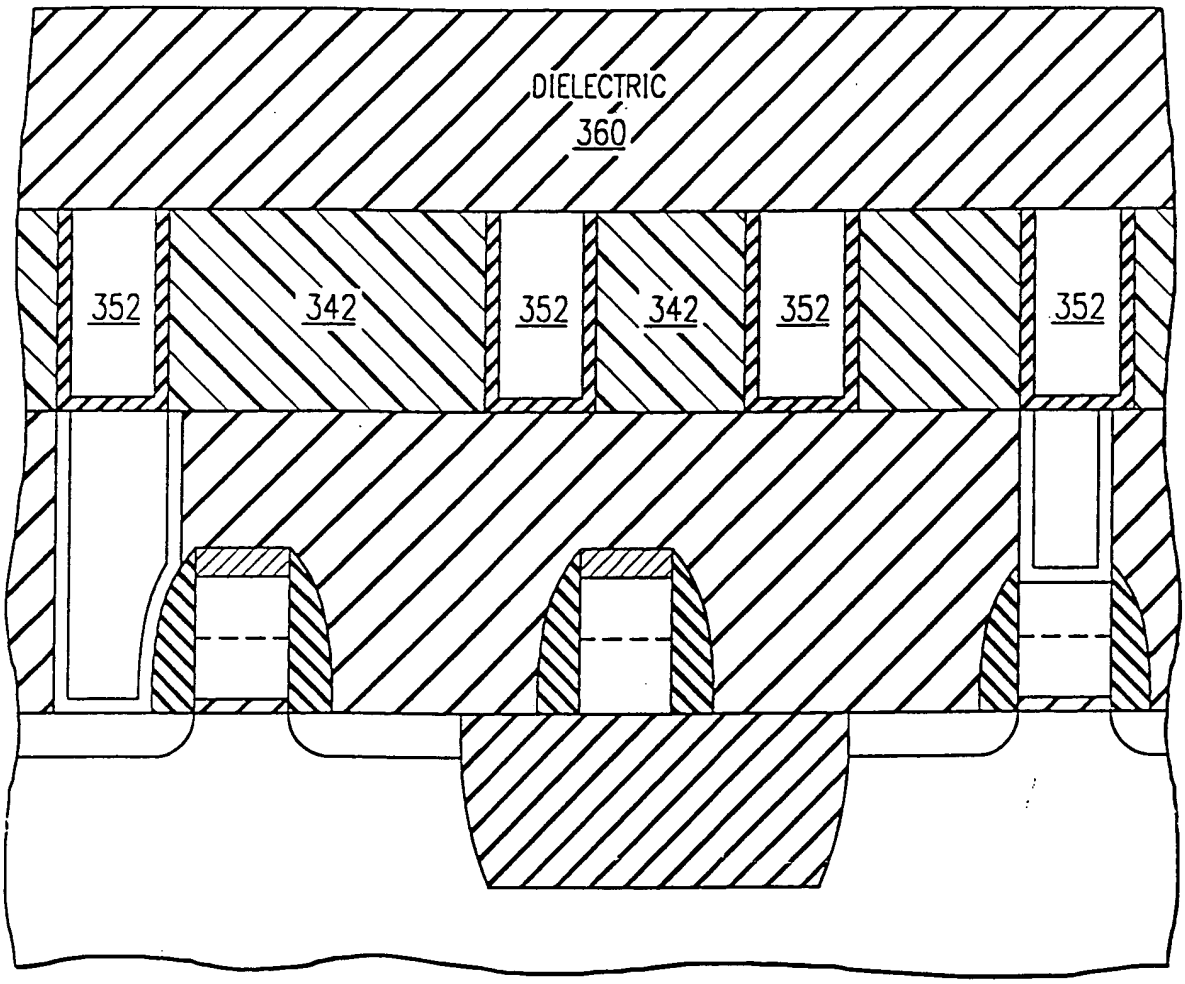


FIG. 3d

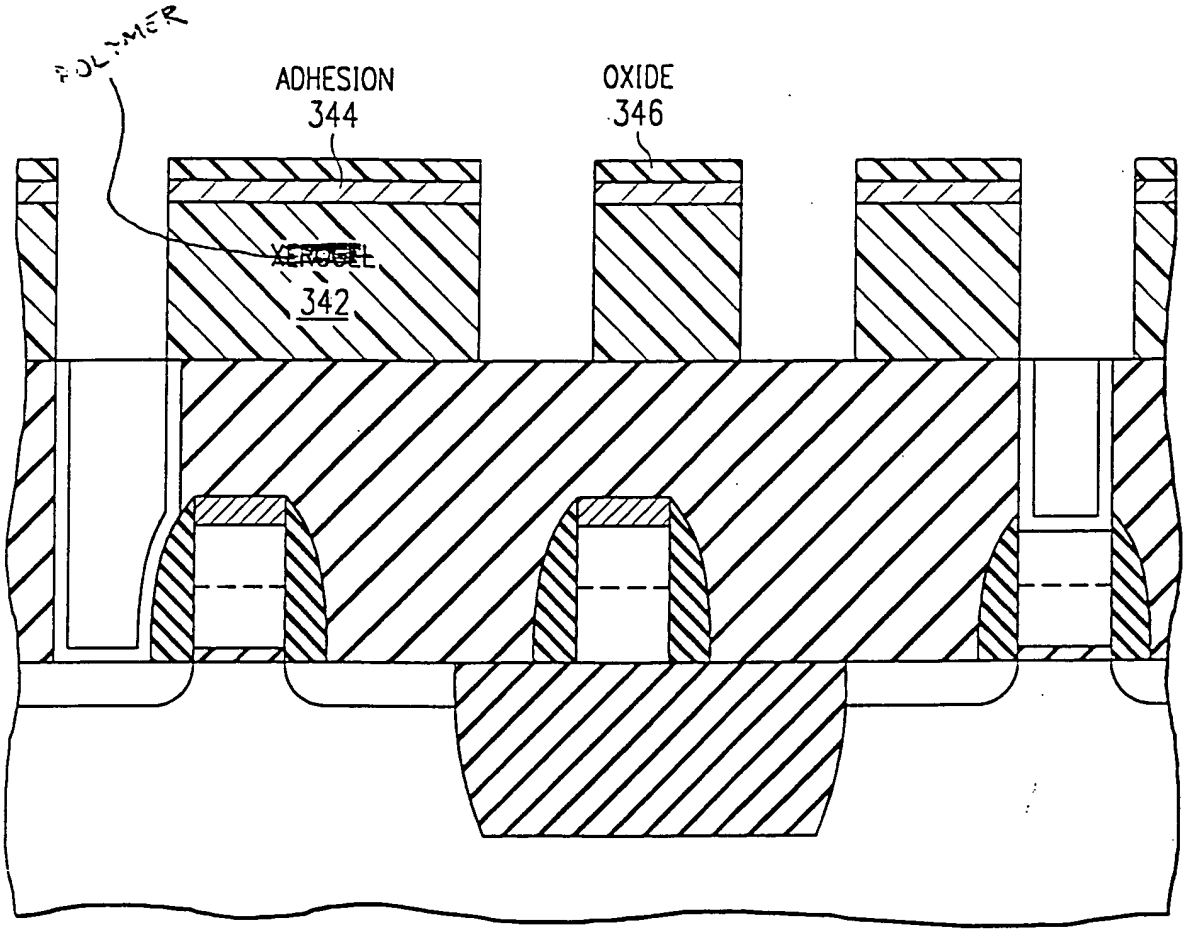


FIG. 3e

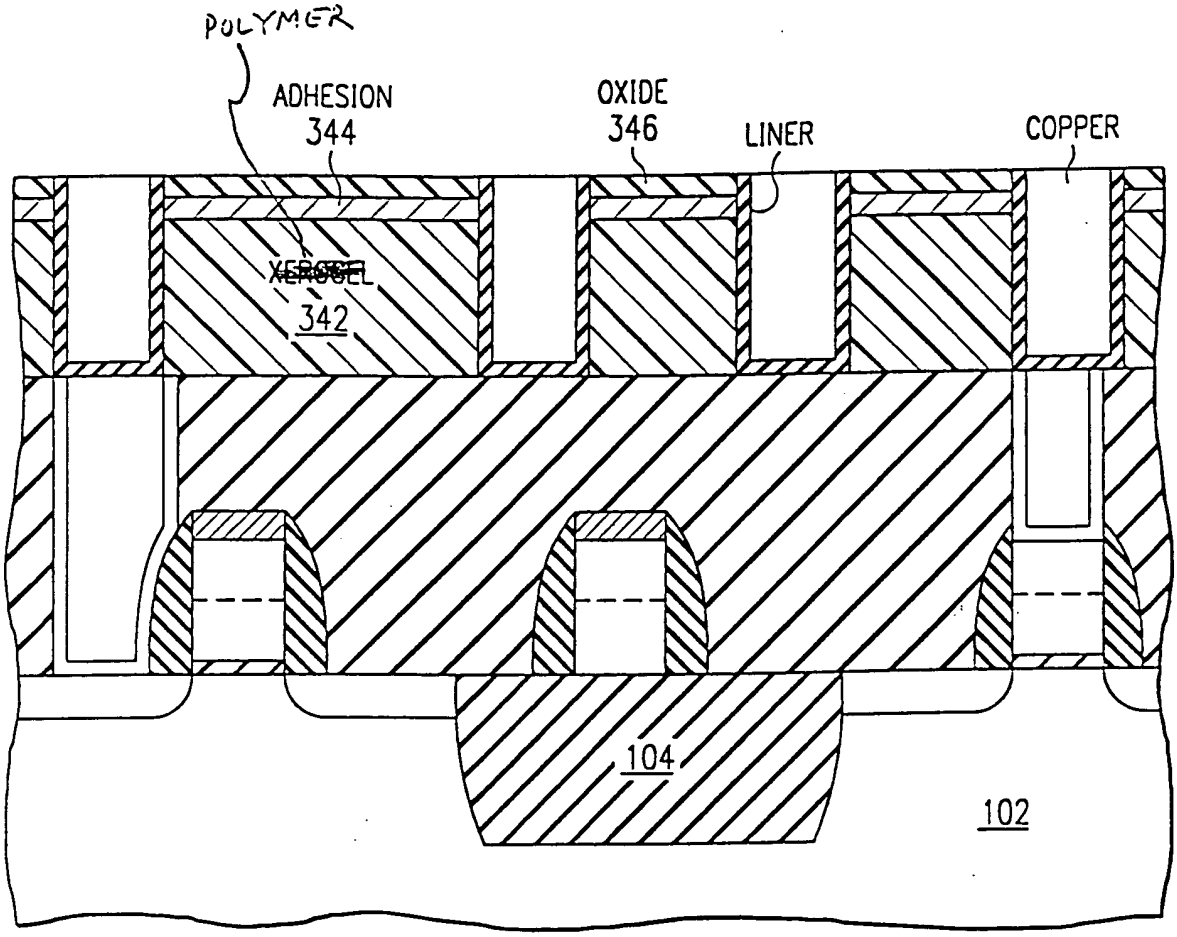

POLYMER
ADHESION
344
OXIDE
346
LINER
COPPER
342
104
102

FIG. 3f

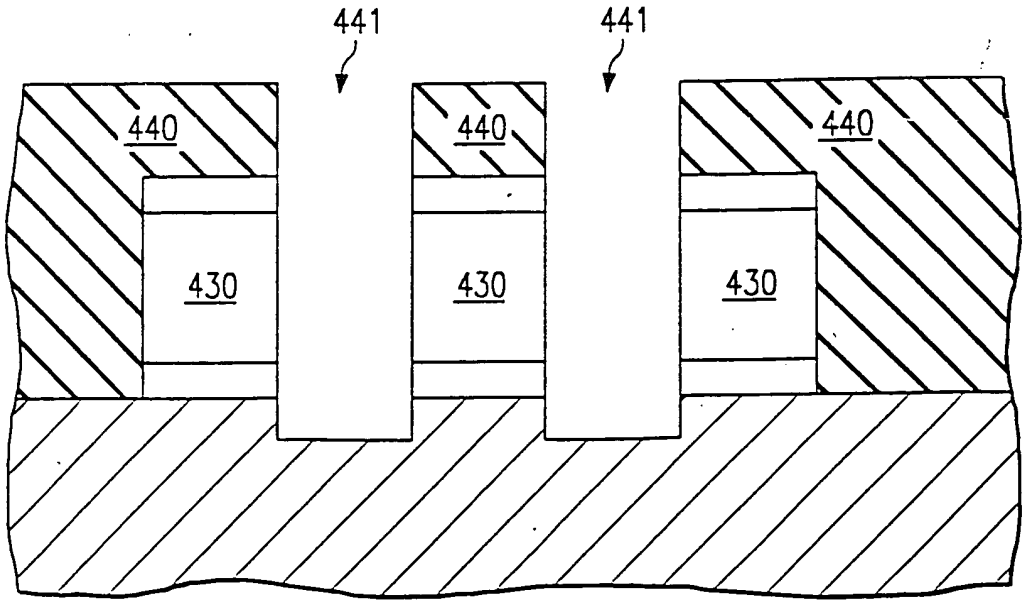

441
441
440
440
440
430
430
430

FIG. 4a

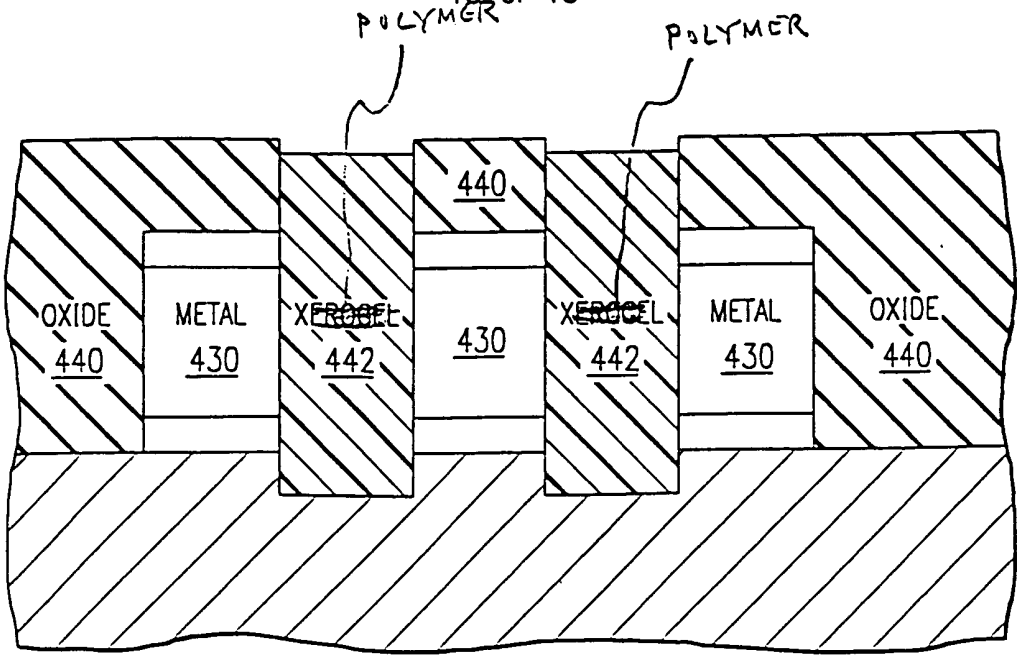

POLYMER
POLYMER
440
OXIDE
440
METAL
430
XEROGEL
442
430
XEROGEL
442
METAL
430
OXIDE
440

FIG. 4b

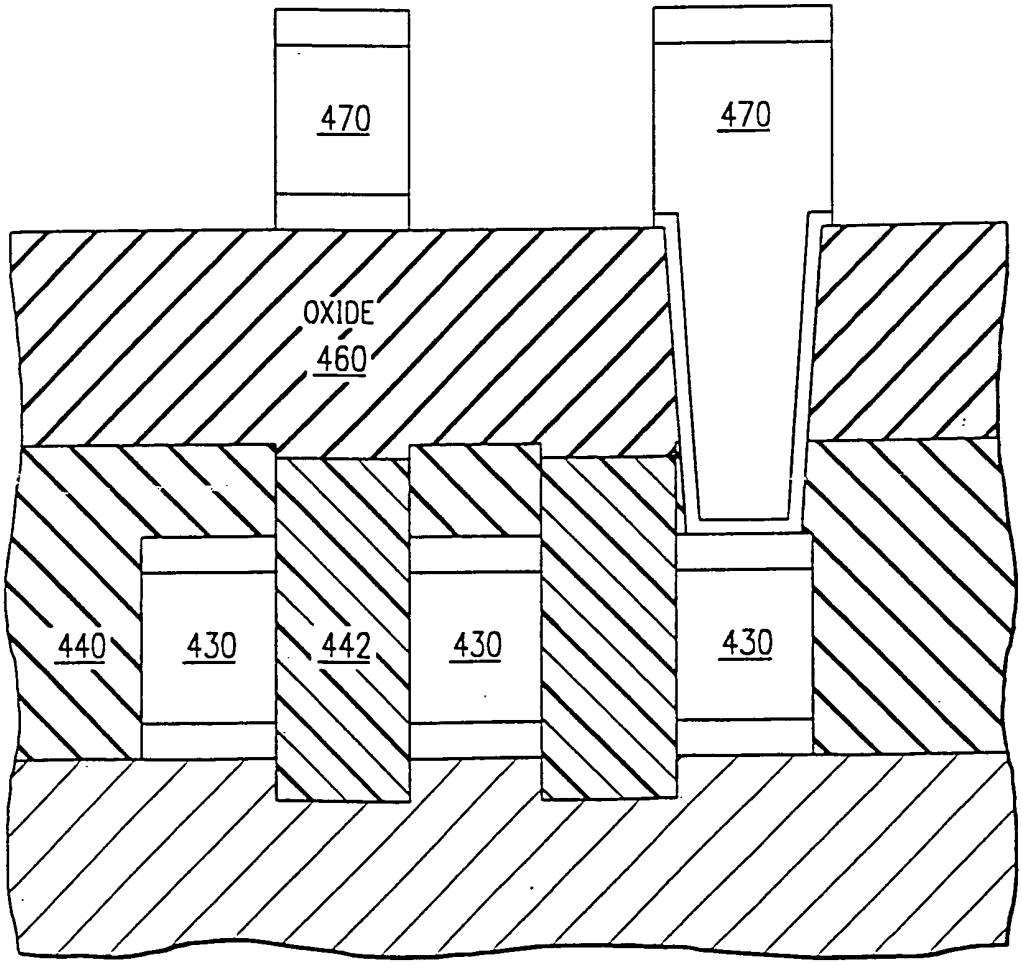

470
470
OXIDE
460
440
430
442
430
430

FIG. 4c

PULSED PLASMA EFFECT TO GAP-FILL

50W deposition of Pentafluorophenyl-pentafluoro-1-propene, k~1.9.

Fig 5a **1/5 ms on/off pulse**

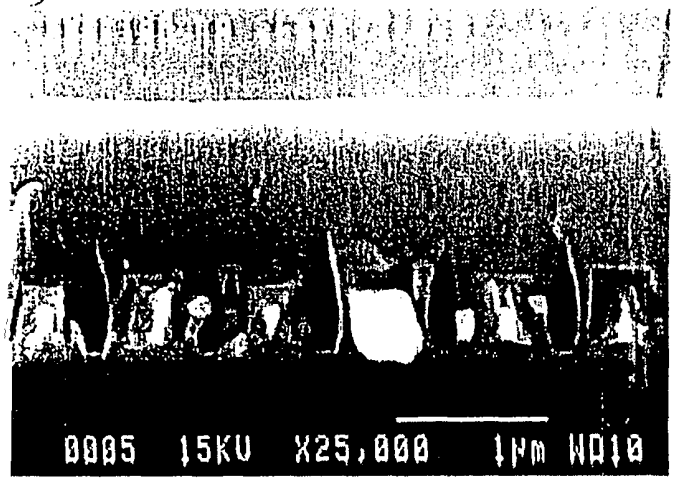


Fig 5b **1/10 ms on/off pulse**

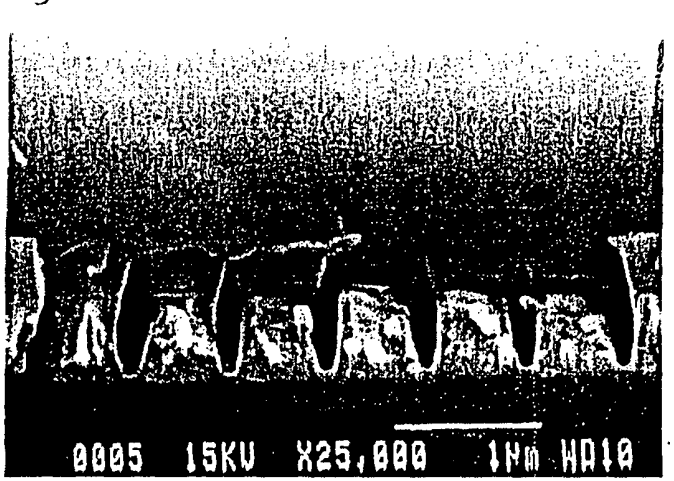


Fig 5c **1/20 ms on/off pulse**

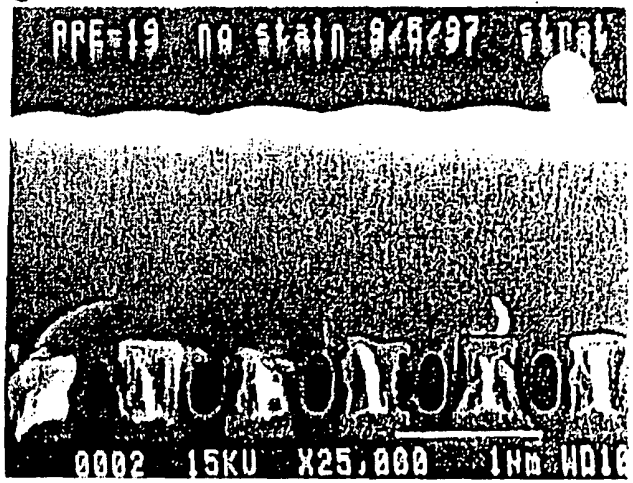


Fig 5d **1/25 ms on/off pulse**

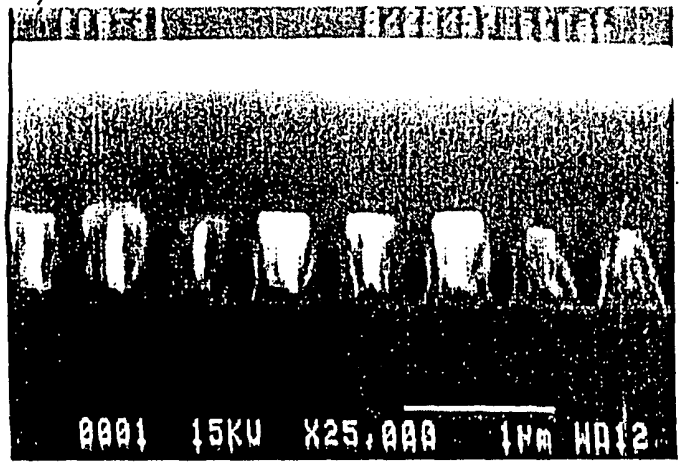


Fig 5e **1/30 ms on/off pulse**

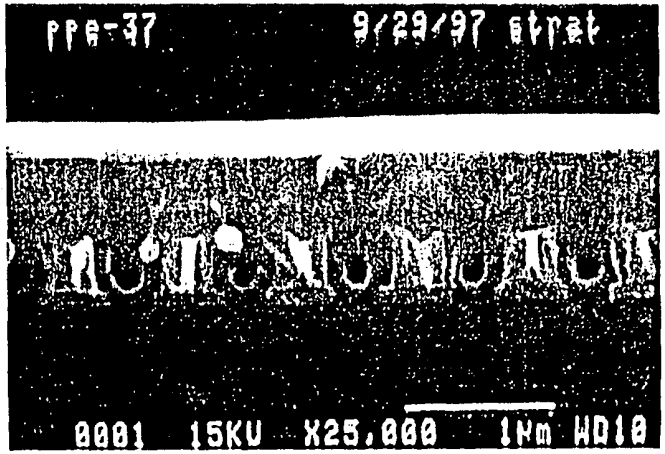
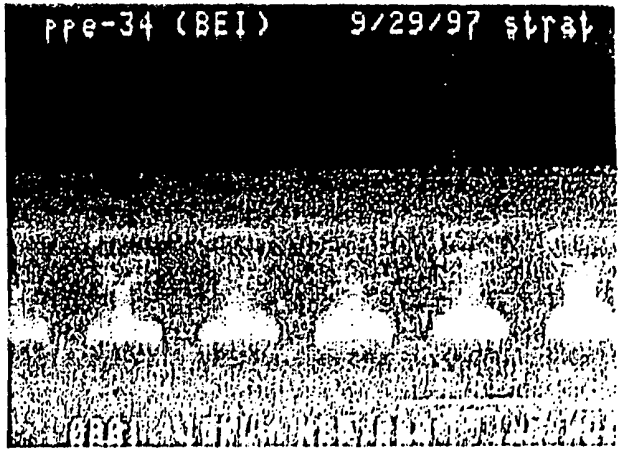


Fig 5f **1/40 ms on/off pulse**



PULSED PLASMA EFFECT TO GAP-FILL

Pentafluorophenyl-pentafluoro-1-propene

Fig.6a 50W, 1/40 ms on/off pulse

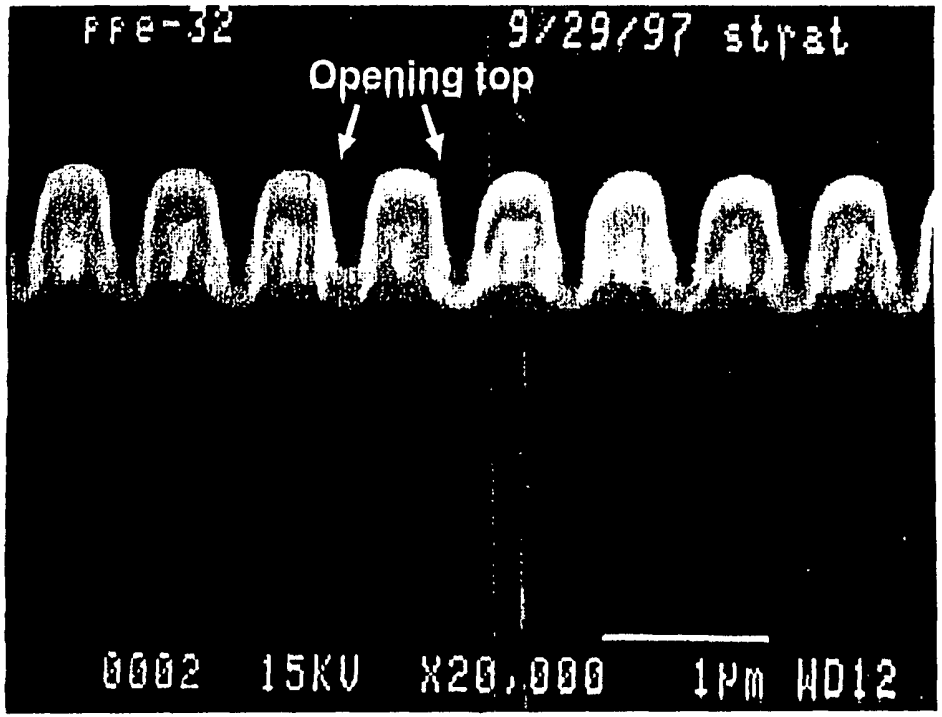
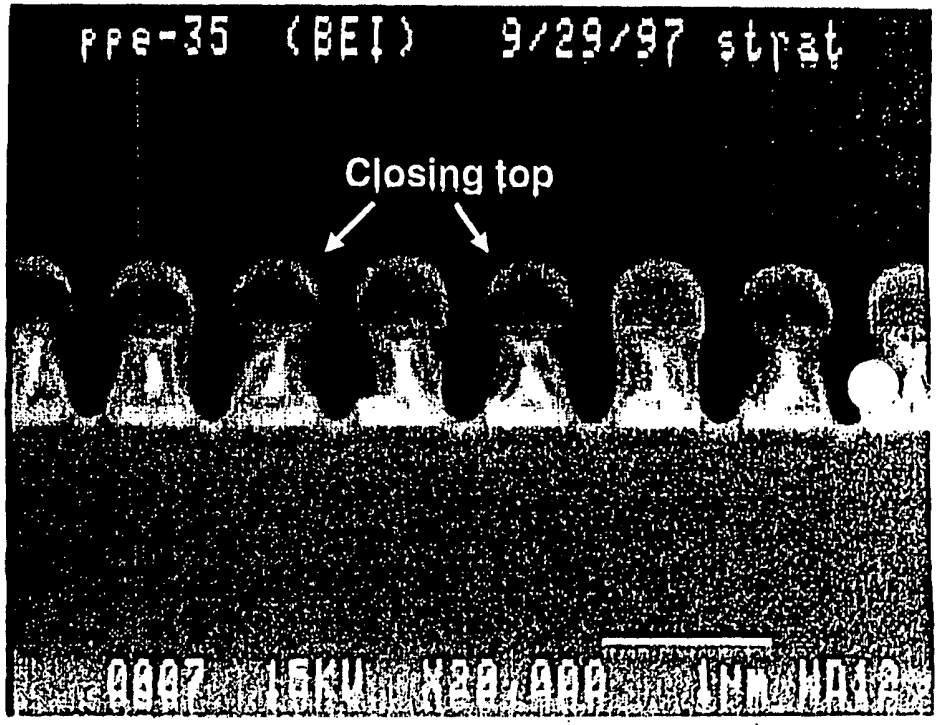


Fig6b 50W, 1/10 ms on/off pulse



SEM OF PULSED PLASMA DEPOSITION FOR GAP FILL

PPPE has dielectric constant value ~1.9.

Fig 7a **Gap fill deposition: 50W, 1/40ms, 10min**

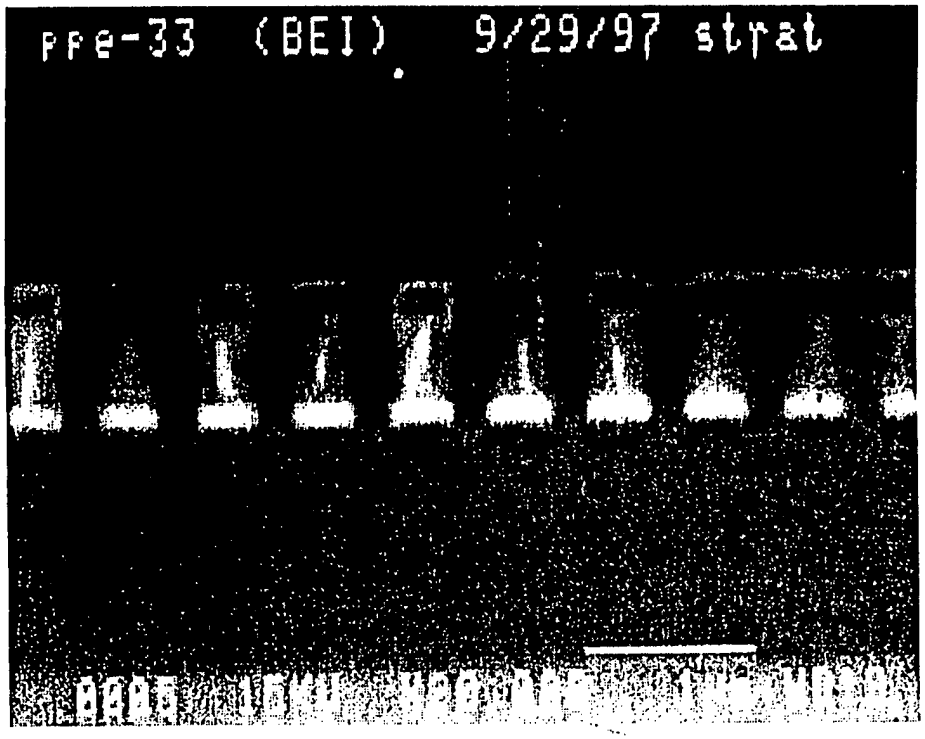
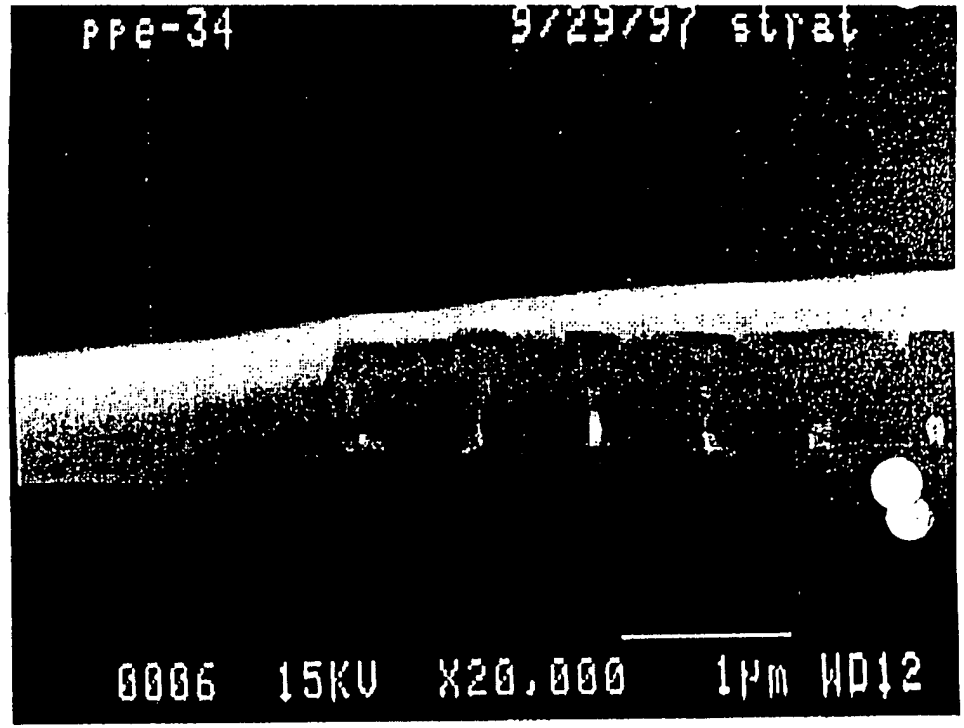


Fig 7b **Planar deposition: 50W, 1/40ms, 20min**



Non-etch back gap fill or planar deposition were achieved by control of deposition time.

EFFECT OF POWER TO PULSED PLASMA DEPOSITION

Fig 8a 200W, 1/40ms, 60min

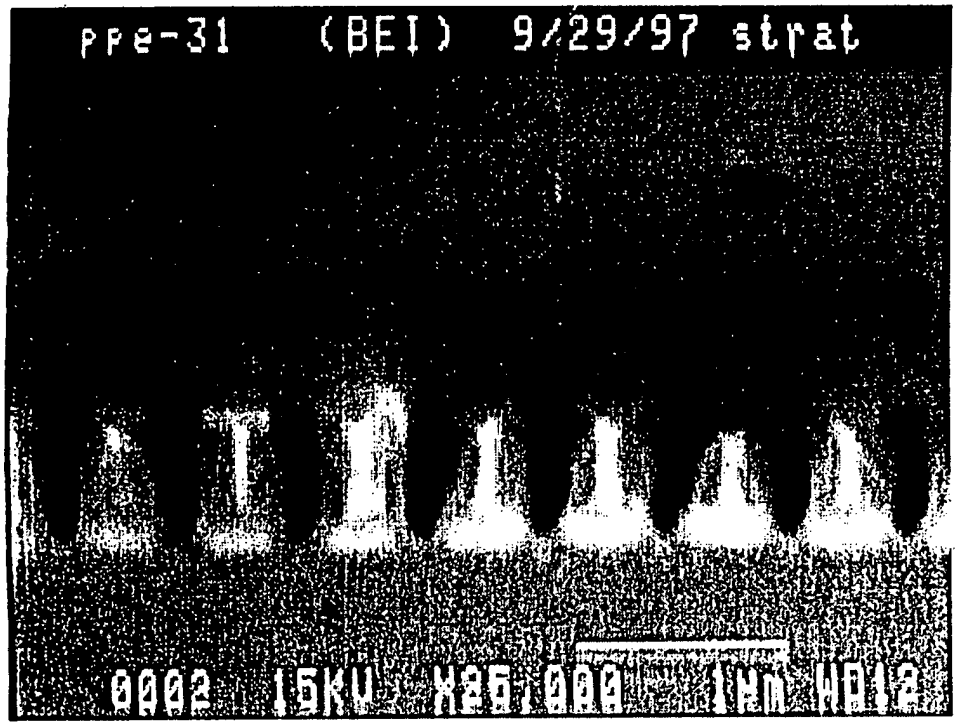
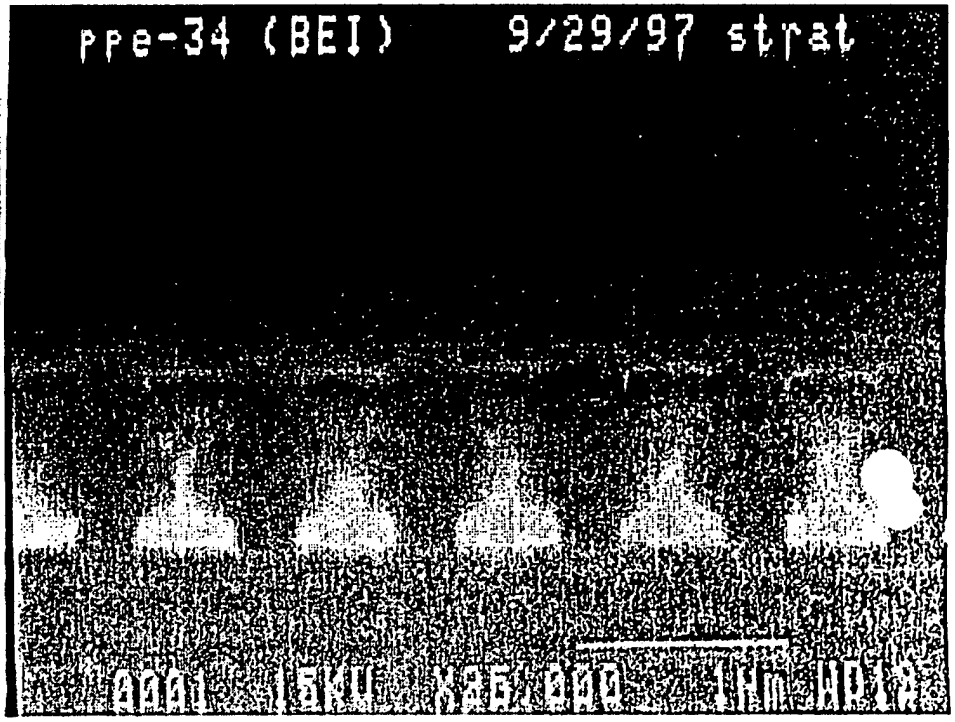


Fig 8b 50W, 1/40ms, 20min



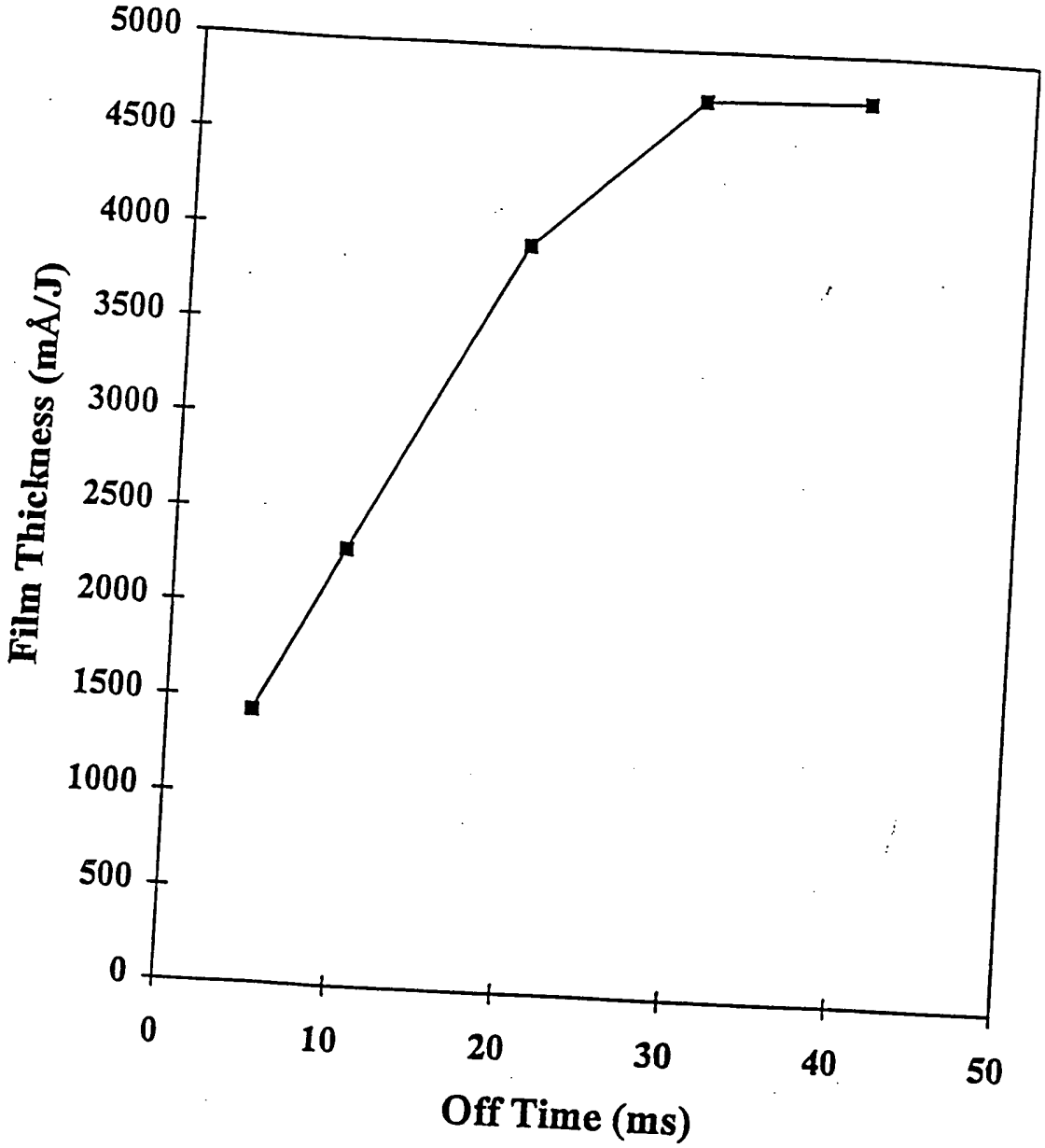

5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Film Thickness (mÅ/J)
0
10
20
30
40
50
Off Time (ms)

Fig # 9

Fig. 16a

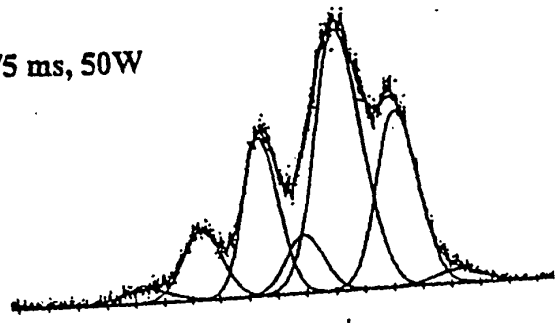


Fig 16b

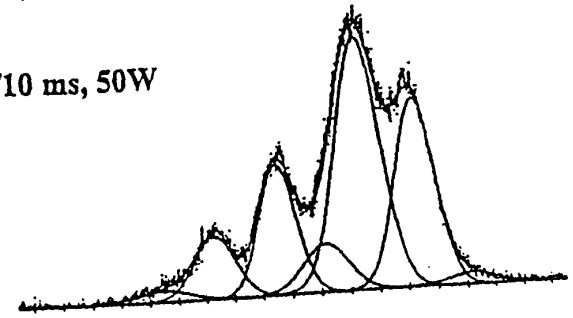


Fig 16c

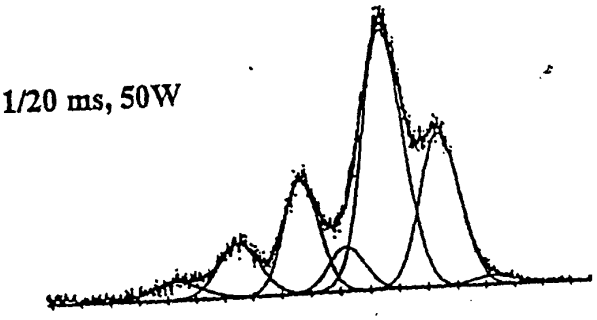


Fig 16d

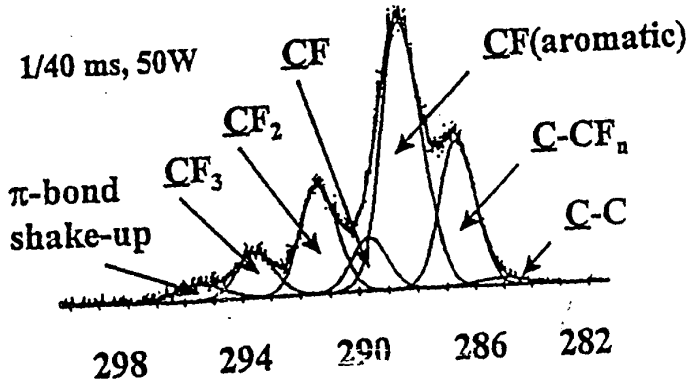
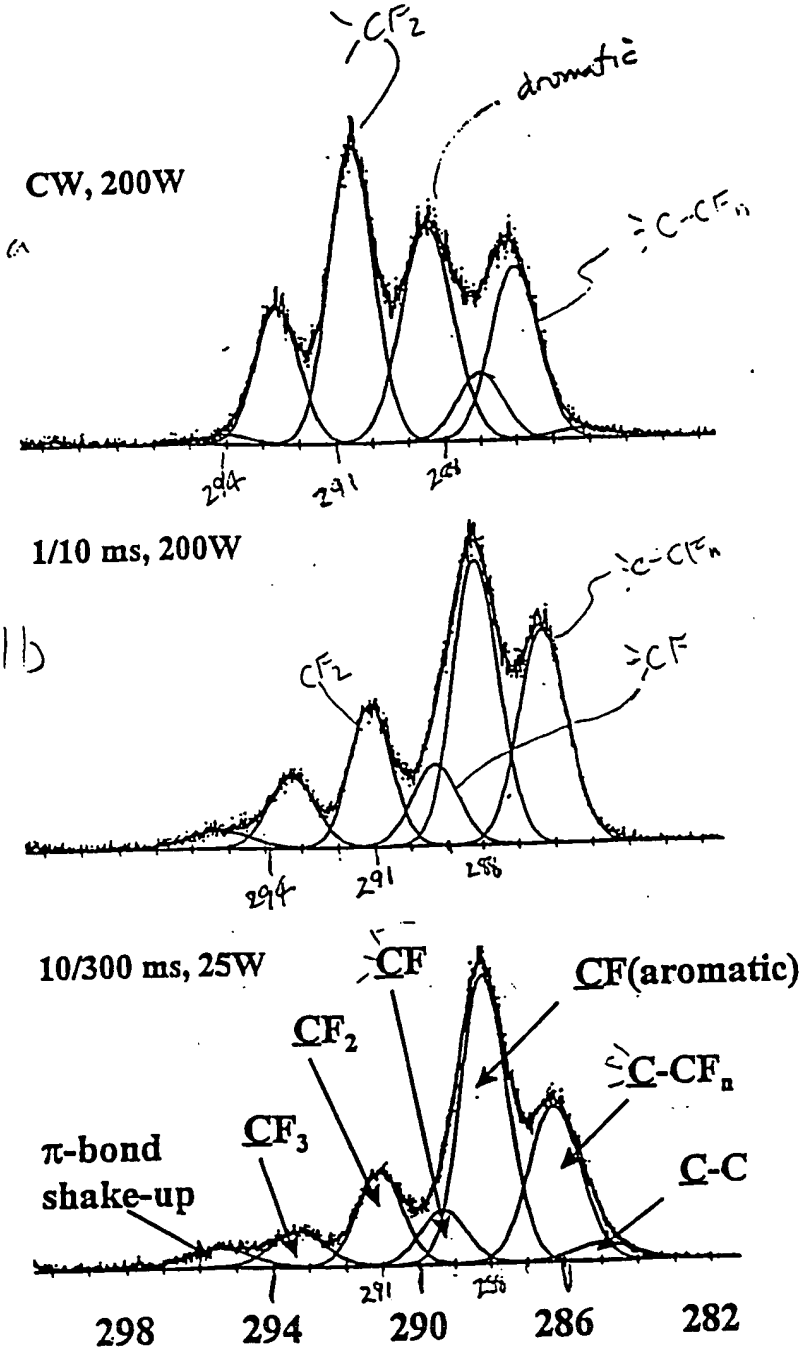


Fig. 2


CW, 200W
1/10 ms, 200W
10/300 ms, 25W
CF
CF(aromatic)
CF2
C-CFn
CF3
π-bond
shake-up
C-C
298
294
290
286
282
Binding Energy, eV

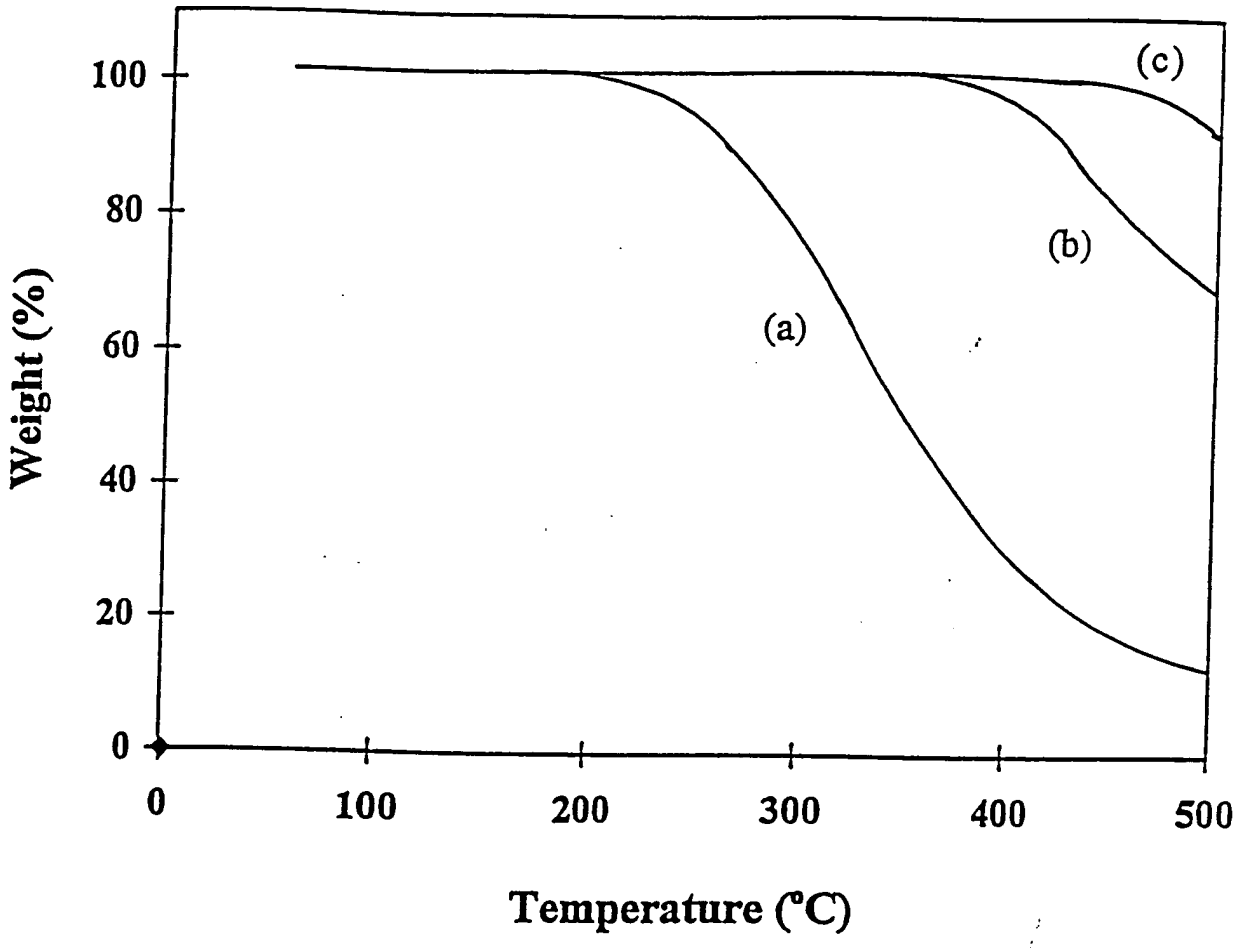


Fig. 12

Fig. 16.

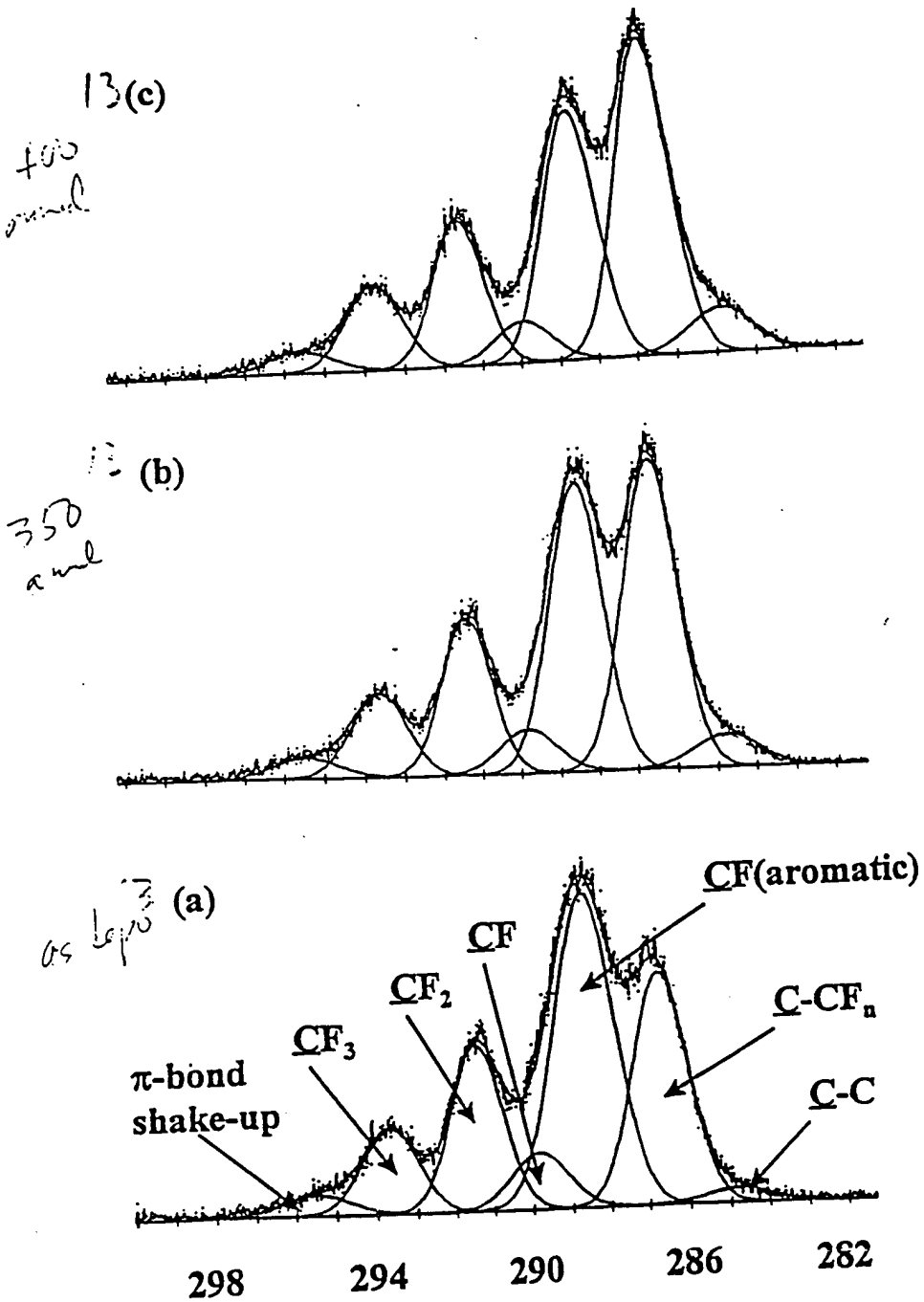

(c)
(b)
(a)
CF(aromatic)
CF
CF2
C-CFn
CF3
π-bond
shake-up
C-C
298
294
290
286
282
Binding Energy, eV

Fig. 13

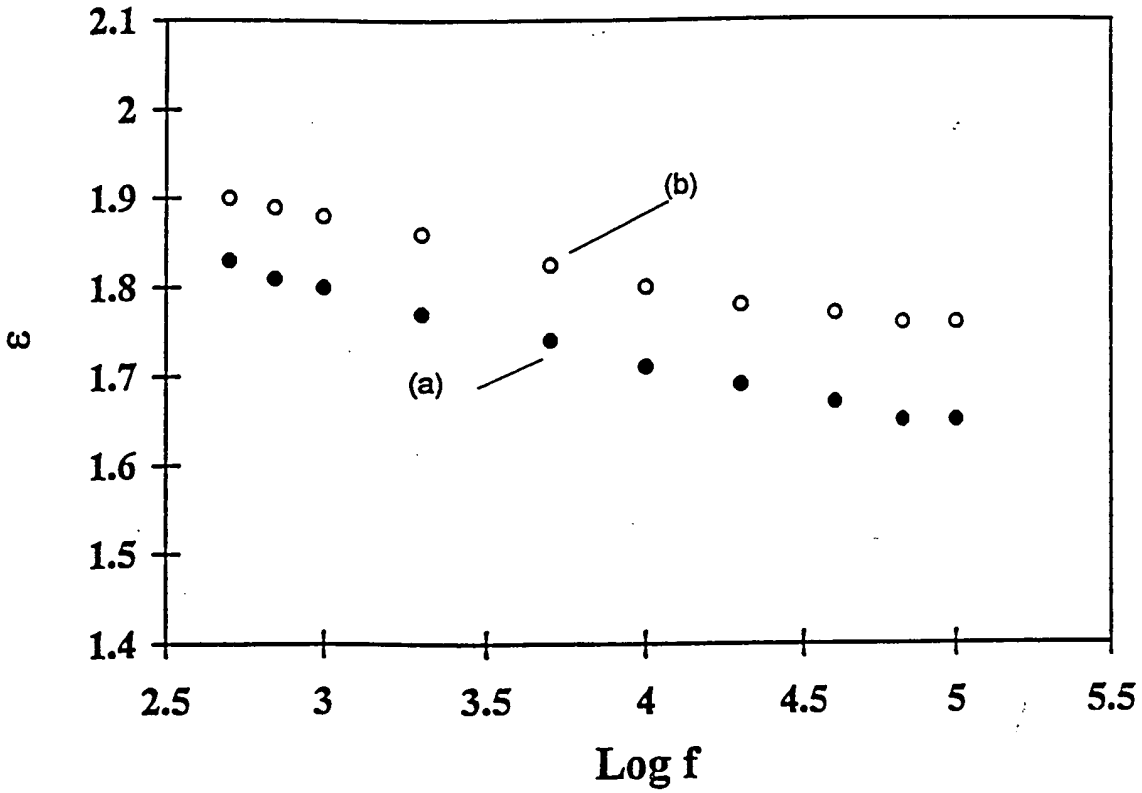


Fig. 14

Fig. 8

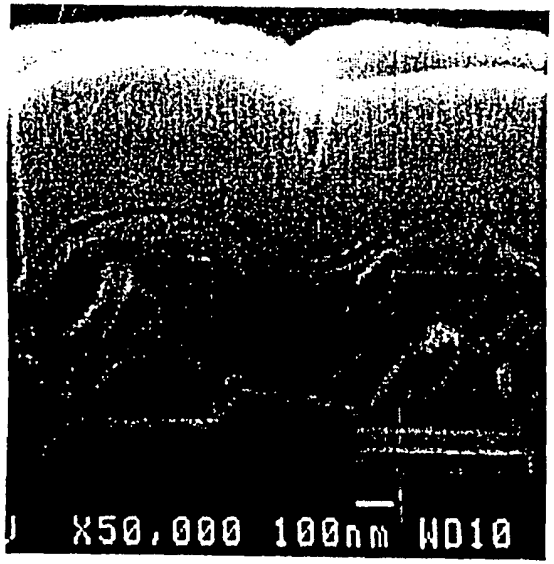


Fig. 15a

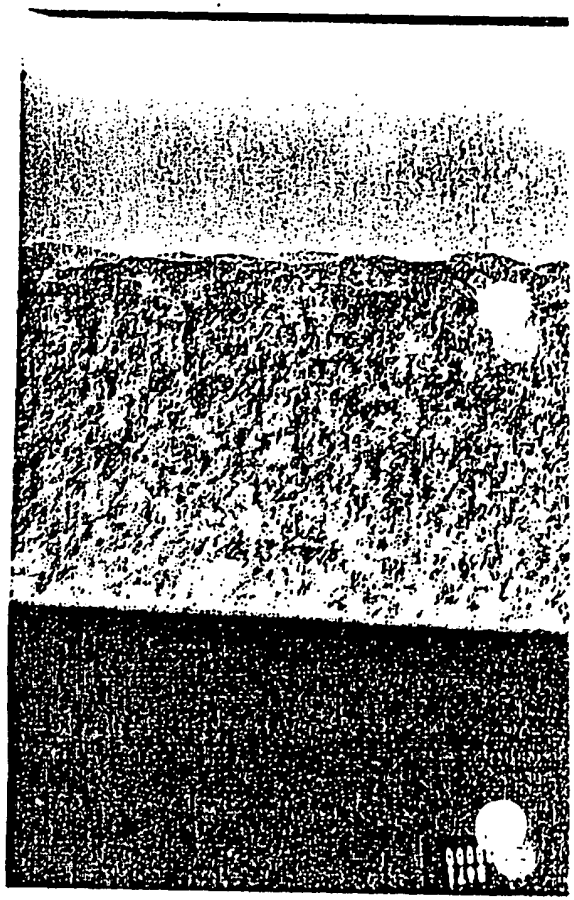


Fig. 15b